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| Form PTO-1449 U.S. Department of Commerce Patent and Trademark Office | Atty. Docket No. 00-713-i12 | Serial No. 09/975,376 |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT | Applicant: Chad A. Mirkin, et al. | |
| | Filing Date: 10/11/01 | Group: 1656 |
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U.S. PATENT DOCUMENTS

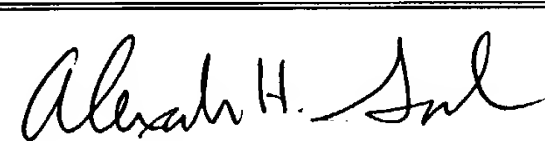
| Examiner Initial | | Document Number | Date | Name | Class | Subclass | Filing Date |
|------------------|-----|-----------------|----------|---------------------|-------|----------|-------------|
| AD | 1. | 5,288,609 | 02/08/94 | Mroczkowski, et al. | | | |
| | 2. | 5,284,748 | 02/22/94 | Engelhardt, et al. | | | |
| | 3. | 5,360,895 | 11/01/94 | Hainfield, et al. | | | |
| | 4. | 5,384,265 | 01/24/95 | Kidwell, et al. | | | |
| | 5. | 5,472,881 | 12/05/95 | Beebe, et al. | | | |
| | 6. | 5,599,668 | 02/04/97 | Stimpson, et al. | | | |
| | 7. | 5,637,508 | 06/10/97 | Kidwell, et al. | | | |
| | 8. | 5,751,018 | 05/12/98 | Alivisatos, et al. | | | |
| | 9. | 5,939,021 | 08/17/99 | Hansen, et al. | | | |
| AD | 10. | 5,990,479 | 11/23/99 | Weiss, et al. | | | |

FOREIGN PATENT DOCUMENTS

| | | Document Number | Date | Country | Class | Subclass | Translation Yes N | |
|----|-----|-----------------|-------------|---------|-------|----------|----------------------|--|
| AD | 11. | WO 93/10564 | 27 May 93 | PCT | | | | |
| | 12. | WO 98/10289 | 12 March 98 | PCT | | | | |
| | 13. | WO 99/23258 | 14 May 99 | PCT | | | | |
| | 14. | WO 99/21934 | 06 May 99 | PCT | | | | |
| AD | 15. | WO 99/20789 | 29 April 99 | PCT | | | | |

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

| | |
|-------------|--|
| <div></div> | 16. O.D. Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>Langmuir</i>, Vol. 15, No. 11, pp. 3693-3698, May 25, 1999 |
|-------------|--|

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|---|---------------------------|
| Examiner  | Date Considered 3/5/04 |
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|------------------|----|-----------------|----------|------------------|-------|----------|----------------------------|
| ad | 1. | 5,599,668 | 02/04/97 | Stimpson, et al. | | | |
| ad | 2. | 5,990,479 | 11/23/99 | Weiss, et al. | | | |
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

| | | |
|--|----|---|
| | 3. | Stimpson, et al., "Real time detection of DNA hybridization and melting on oligonucleotide arrays by using optical wave guides," <i>Proc. Natl. Acad. Sci.</i>, Vol. 92, pp. 6379-6383, California Institute of Technology (1995) U.S. |
| | 4. | Storhoff, et al., "Strategies for Organizing Nanoparticles into Aggregate Structures and Functional Materials," <i>Journal of Cluster Science</i>, Vol. 8, No. 2, pp. 179-217, Plenum Publishing Corporation (1997) U.S. |
| | 5. | Storhoff, et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticle Probes," <i>J. Am. Chem. Soc.</i>, Vol. 120, pp. 1961-1964, American Chemical Society (1998) U.S. |
| | 6. | Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>Langmuir</i>, Vol. 15, No. 11, pp. 3693-3698, American Chemical Society (1999) U.S. |
| | 7. | Zhu, et al., "The First Raman Spectrum of an Organic Monolayer on a High-Temperature Superconductor: Direct Spectroscopic Evidence for a Chemical Interaction between an Amine and YBa₂Cu₃O_{7-δ}," <i>J. Am. Chem. Soc.</i>, Vol. 119, pp. 235-236, American Chemical Society (1997) U.S. |

EXAMINER

Alviah H. Smith

DATE CONSIDERED

3/5/04

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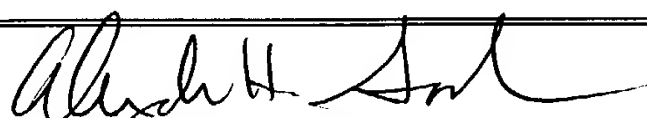
FOREIGN PATENT DOCUMENTS

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

| | |
|----|--|
| 8. | Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs an Their Use as Tracer Labels in Clinical and Biological Applications," I. Theory, <i>Analytical Biochemistry</i> , Vol. 262, pp. 137-156 (1998) U.S. |
| 9. | Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs an Their Use as Tracer Labels in Clinical and Biological Applications," II. Experimental Characterization, <i>Analytical Biochemistry</i> , Vol. 262, pp. 157-176 (1998) U.S. |
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EXAMINER



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| Examiner Initial | Serial No. | Document Number | Date | Name | Class | Subclass | Filing Date if Appropriate |
|------------------|------------|-----------------|----------|---------------|-------|----------|----------------------------|
| as | 1. | 5,609,907 | 03/11/97 | Natan | — | — | |
| | 2. | 6,025,202 | 02/15/00 | Natan | — | — | |
| as | 3. | 6,149,868 | 11/21/00 | Natan, et al. | — | — | |

FOREIGN PATENT DOCUMENTS

| Serial No. | Document Number | Date | Country | Class | Subclass | Translation | |
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| | | | | | | Yes | No |
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

| | |
|----|---|
| 1. | Brada, et al., "Golden Blot" – Detection of Polyclonal and Monoclonal Antibodies Bound to Antigens on Nitrocellulose by Protein A-Gold Complexes, <i>Analytical Biochemistry</i> , Vol. 42, pp. 79-83 (1984) U.S. |
| 2. | Dunn, et al., "A Novel Method to Map Transcripts: Evidence for homology between an Adenovirus mRNA and Discrete Multiple Regions of the Viral Genome, <i>Cell</i> , Vol. 12, pp. 23-36, (1997) U.S. |
| 3. | Hacker, "High performance Nanogold – Silver in situ hybridisation, <i>Eur. J. Histochem</i> , Vol. 42, pp. 111-120 (1998) U.S. |
| 4. | Ranki, et al., "Sandwich hybridization as a convenient method for the detection of nucleic acids in crude samples," <i>Gene</i> , Vol. 21, pp. 77-85 (1983) U.S. |
| 5. | Romano, et al., "An antiglobulin reagent labelled with colloidal gold for use in electron microscopy," <i>Immunochemistry</i> , Vol. 11, pp. 521-522 (1974) Great Britain |
| | |
| | |

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| <div style="text-align: center;"> INFORMATION DISCLOSURE STATEMENT BY APPLICANT </div> <div style="text-align: center;"> (Use several sheets if necessary) </div> | | Applicant: Chad A. Mirkin, et al. | |
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U.S. PATENT DOCUMENTS

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|------------------|----|-----------------|----------|------------------|-------|----------|----------------------------|
| AL | 1. | 5,830,986 | 11/03/98 | Merrill, et al. | 528 | 332 | 10/28/96 |
| | 2. | 5,900,481 | 05/04/99 | Lough, et al. | 536 | 55.3 | 11/06/96 |
| | 3. | 6,203,989 | 03/20/01 | Goldberg, et al. | 435 | 6 | 03/25/99 |
| | 4. | 6,251,303 | 06/26/01 | Bawendi, et al. | 252 | 301.4R | 09/18/98 |
| | 5. | 6,277,489 | 08/21/01 | Abbott, et al. | 428 | 403 | 12/04/98 |
| | 6. | 6,306,610 | 10/23/01 | Bawendi, et al. | 435 | 7.1 | 09/17/99 |
| | 7. | 6,361,944 | 03/26/02 | Mirkin, et al. | 435 | 6 | 06/25/99 |
| | 8. | 6,365,418 | 04/02/02 | Wagner, et al. | 436 | 518 | 05/18/00 |
| AL | 9. | 6,417,340 | 07/09/02 | Mirkin, et al. | 536 | 23.1 | 10/20/00 |

FOREIGN PATENT DOCUMENTS

| | | Document Number | Date | Country | Class | Subclass | Translation | |
|----|-----|-----------------|------------------|---------|-------|----------|-------------|----|
| | | | | | | | Yes | No |
| AL | 10. | WO 93/25709 | 23 December 1993 | PCT | | | | |
| | 11. | WO 98/04740 | 5 February 1998 | PCT | | | | |
| | 12. | WO 98/17317 | 30 April 1998 | PCT | | | | |
| | 13. | WO 99/60169 | 25 November 1999 | PCT | | | | |
| | 14. | WO 00/33079 | 8 June 2002 | PCT | | | | |
| AL | 15. | WO 01/00876 | 4 January 2001 | PCT | | | | |

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|---------------------|-------------------------------|
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|----------|-----|-----------------|------------------|---------|-------|----------|-----------------|----|
| <i>W</i> | 16. | WO 01/51665 | 19 July 2001 | PCT | _____ | _____ | | |
| | 17. | WO 01/73123 | 4 October 2001 | PCT | _____ | _____ | | |
| | 18. | WO 01/86301 | 15 November 2001 | PCT | _____ | _____ | | |
| | 19. | WO 02/04681 | 17 January 2002 | PCT | _____ | _____ | | |
| | 20. | WO 02/18643 | 7 March 2002 | PCT | _____ | _____ | | |
| | 21. | WO 02/36169 | 10 May 2002 | PCT | _____ | _____ | | |
| | 22. | WO 02/46483 | 13 June 2002 | PCT | _____ | _____ | | |
| <i>W</i> | 23. | WO 02/46472 | 13 June 2002 | PCT | _____ | _____ | | |

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

| | | |
|----------|-----|---|
| <i>W</i> | 24. | Letsinger, R., et al., "Chemistry of Oligonucleotide-Gold Nanoparticle Conjugates," Phosphorus, Sulfur and Silicon , Volume 144, p. 359-362 (1999) |
| <i>W</i> | 25. | Letsinger, R., et al., "Use of a Steroid Cyclic Disulfide Anchor in Constructing Gold Nanoparticle-Oligonucleotide Conjugates," Bioconjugate Chem. , p. 289-291 (2000) |

EXAMINER

Abraham H. [Signature]

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| | | | | | |
| | | | | | |
| | | | | | |

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

| | |
|-----|---|
| 26. | Li Z., et al., "Multiple thiol-anchor capped DNA-gold nanoparticle conjugates," <i>Nucleic Acids Research</i> , Volume 30, p. 1558-1562 (2002) |
| 27. | Nuzzo R., et al., "Spontaneously Organized Molecular Assemblies. 3. Preparation and Properties of Solution Adsorbed Monolayers of Organic Disulfides on Gold Surfaces," <i>J. Am Chem. Soc.</i> , Volume 109, p. 2358-2368 (1987) |
| 28. | Otsuka, H., et al., "Quantitative and Reversible Lectin-Induced Association of Gold Nanoparticles Modified with D-Lactosyl-D-mercaptopoly(ethyleneglycol)," <i>J. Am Chem. Soc.</i> , Volume 123, p. 8226-8230 (2001) |
| 29. | Wuelfing, P., et al., "Nanometer Gold Clusters Protected by Surface-Bound Monolayers of Thiolated Poly(ethylene glycol) Polymer Electrolyte," <i>J. Am Chem. Soc.</i> , Volume 120, p. 12696-12697 (1998) |

EXAMINER

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3/5/04

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|------------------|----|-----------------|----------|--------------------|-------|----------|----------------------------|
| ad | 1. | 4,996,143 | 02/26/91 | Heller, et al. | 435 | 6 | 04/13/90 |
| | 2. | 5,508,164 | 04/16/96 | Kausch, et al. | 435 | 6 | 10/29/93 |
| | 3. | 5,922,537 | 07/13/99 | Ewart, et al. | 435 | 6 | 11/8/96 |
| | 4. | 5,972,615 | 10/26/99 | An, et al. | 435 | 6 | 01/21/98 |
| | 5. | 6,264,825 | 07/24/01 | Blackburn, et al. | 205 | 777.5 | 06/23/99 |
| ad | 6. | 6,214,560 | 04/10/01 | Yguerabide, et al. | 435 | 7.1 | 04/18/97 |

FOREIGN PATENT DOCUMENTS

| | | Document Number | Date | Country | Class | Subclass | Translation Yes | Translation No |
|----|----|-----------------|----------|---------|-------|----------|-----------------|----------------|
| ad | 7. | WO 94/29484 | 12/22/94 | PCT | | | | |
| ad | 8. | WO 00/25136 | 05/04/00 | PCT | | | | |

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)



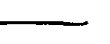

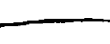

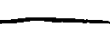

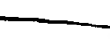

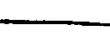

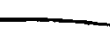

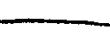

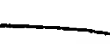





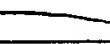

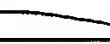
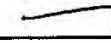
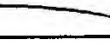




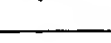
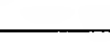

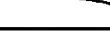
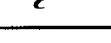



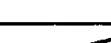




| | |
|-----|--|
| 9. | Mohanty J., et al. "Pulsed laser excitation of phosphate stabilized silver nanoparticles," <i>Proc. Indian Acad. Sci.</i> , Vol. 112, No. 1, p. 63-72. |
| 10. | Nicewarner- Peña S., et al., "Hybridization and Enzymatic Extension of Au Nanoparticle-Bound Oligonucleotides," <i>J. Am. Chem. Soc.</i> , Vol. 124, p. 7314-7323 (2002) |
| 11. | Whitesides G.M., et al., "Soft Lithography in Biology and Biochemistry," <i>Annu. Rev. Biomed. Eng.</i> , p. 335-373 (2001) |

| | |
|---------------------|----------------------------------|
| EXAMINER | DATE CONSIDERED 3/5/04 |
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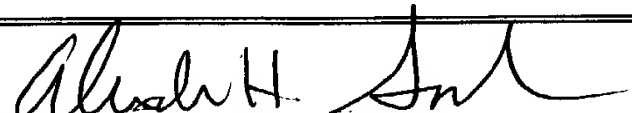
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| Form PTO-1449 U.S. Department of Commerce Patent and Trademark Office INFORMATION DISCLOSURE STATEMENT BY APPLICANT | Atty. Docket No. 00-713-i12 | Serial No. 09/975,376 |
| | Applicant: Chad A. Mirkin, et al. | |
| | Filing Date: 10/11/01 | Group: 1656 |

U.S. PATENT DOCUMENTS

| Examiner Initial | | Document Number | Date | Name | Class | Subclass | Filing Date |
|---|-----|-----------------|----------|--------------------|---|---|-------------|
|  | 1. | 4,193,983 | 3/18/80 | Ullman et al. |  |  | |
| | 2. | 4,256,834 | 3/17/81 | Zuk et al. |  |  | |
| | 3. | 4,261,968 | 4/14/81 | Ullman et al. |  |  | |
| | 4. | 4,313,734 | 2/2/82 | Leuving |  |  | |
| | 5. | 4,318,707 | 3/9/82 | Litman et al. |  |  | |
| | 6. | 4,650,770 | 3/17/87 | Liu et al. |  |  | |
| | 7. | 4,713,348 | 12/15/87 | Ullman |  |  | |
| | 8. | 4,853,335 | 8/1/89 | Olsen et al. |  |  | |
| | 9. | 4,868,104 | 9/19/89 | Kura et al. |  |  | |
| | 10. | 5,225,064 | 7/6/93 | Henkens et al. |  |  | |
| | 11. | 5,294,369 | 3/15/94 | Shigekawa et al. |  |  | |
| | 12. | 5,384,073 | 1/24/95 | Shigekawa et al. |  |  | |
| | 13. | 5,384,265 | 1/24/95 | Kidwell et al. |  |  | |
| | 14. | 5,460,831 | 10/24/95 | Kossovsky et al. |  |  | |
| | 15. | 5,472,881 | 12/5/95 | Beebe et al. |  |  | |
| | 16. | 5,514,602 | 05/07/96 | Brooks, Jr. et al. |  |  | |
| | 17. | 5,521,289 | 5/28/96 | Hainfeld et al. |  |  | |
| | 18. | 5,543,158 | 8/6/96 | Gref et al. |  |  | |
| | 19. | 5,571,726 | 11/05/96 | Brooks, Jr. et al. |  |  | |
| | 20. | 5,665,582 | 9/9/97 | Kaushch et al. |  |  | |
|  | 21. | 5,681,943 | 10/28/97 | Letsinger et al. |  |  | |

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

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U.S. PATENT DOCUMENTS

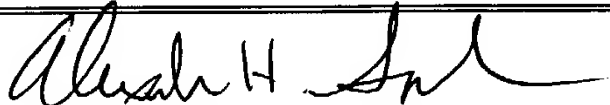
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FOREIGN PATENT DOCUMENTS

| | | Document Number | Date | Country | Class | Subclass | Translation Yes N |
|----|-----|-----------------|----------|---------|-------|----------|----------------------|
| AD | 22. | WO 89/06801 | 7/27/89 | PCT | | | |
| | 23. | WO 97/40181 | 10/30/97 | PCT | | | |
| | 24. | WO 98/04740 | 2/5/98 | PCT | | | |
| | 25. | WO 99/23258 | 10/30/98 | PCT | | | |
| | 26. | 0 630 974 A2 | 06/21/94 | EPO | | | |
| AD | 27. | 0 667 398 A2 | 8/16/95 | EPO | | | |

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

| | |
|-----|--|
| 28. | Alivisatos et al., "Organization of 'nanocrystal molecules' using DNA," <i>Nature</i>, Vol. 382, pp. 609-611 (1996) |
| 29. | Bain, et al., "Modeling Organic Surfaces with Self-Assembled Monolayers," <i>Angew. Chem. Int. Ed. Engl.</i>, Vol. 28, pp. 506-512 (1989) |
| 30. | Bradley, "The Chemistry of Transition Metal Colloids," <i>Clusters and Colloids: From Theory to Applications</i> G. Schmid, Editor, BCH, Weinheim, New York, pp. 459-542 (1994) |
| 31. | Brust et al., "Novel Gold-Dithiol Nano-Networks with Non-Metallic Electronic Properties," <i>Adv. Mater.</i>, Vol. 7, pp. 795-797 (1995) |
| 32. | Chen et al., "A Specific Quadrilateral Synthesized from DNA Branched Junctions," <i>J. Am. Chem. Soc.</i>, Vol. 111, pp. 6402-6407 (1989) |
| 33. | Chen & Seeman, "Synthesis from DNA of a molecule with the connectivity of a cube," <i>Nature</i>, Vol. 350, pp. 631-633 (1991) |
| 34. | Chen et al., "Crystal Structure of a Four-Stranded Intercalated DNA: d(C₄)^{††} <i>Biochem.</i>, Vol. 33, pp. 13540-13546 (1994) |
| 35. | Dagani, "Supramolecular Assemblies DNA to organize gold nanoparticles," <i>Chemical & Engineering News</i> p. 6-7, August 19, 1996 |

| | | | |
|----------|---|-----------------|--------|
| Examiner |  | Date Considered | 3/5/04 |
|----------|---|-----------------|--------|

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

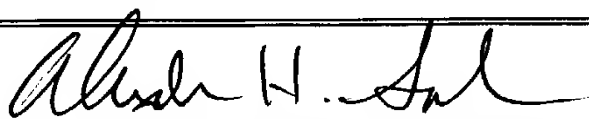
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U.S. PATENT DOCUMENTS

| Examiner Initial | Document Number | Date | Name | Class | Subclass | Filing Date |
|------------------|-----------------|------|------|-------|----------|-------------|
| | | | | | | |

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

| | |
|-----|---|
| 36. | Dubois & Nuzzo, "Synthesis, Structure, and Properties of Model Organic Surfaces," <i>Annu. Rev. Phys. Chem.</i> , Vol. 43, pp. 437-464 (1992) |
| 37. | Elghanian et al., "Selective Colorimetric Detection of Polynucleotides Based on the Distance-Dependent Optical Properties of Gold Nanoparticles," <i>Science</i> , Vol. 277, pp. 1078-1081 (1997) |
| 38. | Grabar et al., "Preparation and Characterization of Au Colloid Monolayers," <i>Anal. Chem.</i> Vol. 67, pp. 735-74 (1995) |
| 39. | Hacia et al., "Detection of heterozygous mutations in BRCA1 using high density oligonucleotide arrays and two-colour fluorescence analysis," <i>Nature Genet.</i> , Vol. 14, pp. 441-447 (1996) |
| 40. | Jacoby, "Nanoparticles change color on binding to nucleotide target," <i>Chemical & Engineering News</i> , p. 10, August 25, 1997 |
| 41. | Letsinger et al., "Use of Hydrophobic Substituents in Controlling Self-Assembly of Oligonucleotides," <i>J. Am. Chem. Soc.</i> , Vol. 115, pp. 7535-7536 (1993) |
| 42. | Letsinger et al., "Control of Excimer Emission and Photochemistry of Stilbene Units by Oligonucleotide Hybridization," <i>J. Am. Chem. Soc.</i> , Vol. 116, pp. 811-812 (1994) |
| 43. | Marsh et al., "A new DNA nanostructure, the G-wire, imaged by scanning probe microscopy," <i>Nucleic Acids Res.</i> , Vol. 23, pp. 696-700 (1995) |
| 44. | Mirkin, "H-DNA and Related Structures," <i>Annu. Review Biophys. Biomol. Struct.</i> , Vol. 23, pp. 541-576 (1994) |
| 45. | Mirkin et al., "A DNA-based method for rationally assembling nanoparticles into macroscopic materials," <i>Nature</i> , Vol. 382, pp. 607-609 (1996) |
| 46. | Mirkin et al., "DNA-Induced Assembly of Gold Nanoparticles: A Method for Rationally Organizing Colloidal Particles into Ordered Macroscopic Materials," <i>Abstract 249, Abstracts of Papers Part 1, 212 ACS National Meeting 0-8412-3402-7, American Chemical Society, Orlando, FL, August 25-29, 1996</i> |
| 47. | Mucic et al., "Synthesis and characterizations of DNA with ferrocenyl groups attached to their 5'-termini: electrochemical characterization of a redox-active nucleotide monolayer," <i>Chem. Commun.</i> , pp. 555-557 (1996) |
| 48. | Mulvaney, "Surface Plasmon Spectroscopy of Nanosized Metal Particles," <i>Langmuir</i> , Vol. 12, pp. 788-800 (1996) |
| 49. | Rabke-Clemmer et al., "Analysis of Functionalized DNA Adsorption on Au(111) Using Electron Spectroscopy," <i>Langmuir</i> , Vol. 10, pp. 1796-1800 (1994) |

| | | | |
|----------|---|-----------------|--------|
| Examiner |  | Date Considered | 3/5/04 |
|----------|---|-----------------|--------|

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

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| | Filing Date: 10/11/01 | Group: 1656 |

U.S. PATENT DOCUMENTS

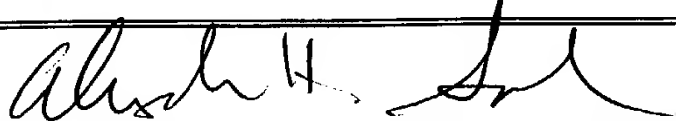
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FOREIGN PATENT DOCUMENTS

| Document Number | Date | Country | Class | Subclass | Translation Yes N |
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| | | | | | |
| | | | | | |

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

| | |
|-----|--|
| 50. | Roubi, "MOLECULAR MACHINES - Nanodevice with rotating arms assembled from synthetic DNA," <i>Chemical & Engineering News</i> , p. 13, (Jan. 1999) |
| 51. | Seeman et al., "Synthetic DNA knots and catenanes," <i>New J. Chem.</i> , Vol. 17, pp. 739-755 (1993) |
| 52. | Shaw & Wang, "Knotting of a DNA Chain During Ring Closure," <i>Science</i> , Vol. 260, pp. 533-536 (1993) |
| 53. | Shekhtman et al., "Stereostructure of replicative DNA catenanes from eukaryotic cells," <i>New J. Chem.</i> Vol. 17 pp. 757-763 (1993) |
| 54. | Smith and Feigon, "Quadruplex structure of Oxytricha telomeric DNA oligonucleotides," <i>Nature</i> , Vol. 356, pp. 164-168 (1992) |
| 55. | Thein et al., "The use of synthetic oligonucleotides as specific hybridization probes in the diagnosis of genetic disorders," 2 nd Ed., K.E. Davies, Ed., Oxford University Press, Oxford, New York, Tokyo, p. 21-33 (1993) |
| 56. | Wang et al., "Assembly and Characterization of Five-Arm and Six-Arm DNA Brached Junctions," <i>Biochem.</i> , Vol. 30, pp. 5667-5674 (1991) |
| 57. | Wang et al., "A DNA Aptamer Which Binds to and Inhibits Thrombin Exhibits a New Structural Motif for DNA," <i>Biochem.</i> , Vol. 32, pp. 1899-1904 (1993) |
| 58. | Weisbecker et al., "Molecular Self-Assembly of Aliphatic Thiols on Gold Colloids," <i>Langmuir</i> , Vol. 12, pp. 3763-3772 (1996) |
| 59. | Wells, "Unusual DNA Structures," <i>J. Biol. Chem.</i> , Vol. 263, pp. 1095-1098 (1988) |
| 60. | Zhang et al., "Informational Liposomes: Complexes Derived from Cholesteryl-conjugated Oligonucleotides and Liposomes," <i>Tetrahedron Lett.</i> , Vol. 37, pp. 6243-6246 (1996) |
| | |

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|--|---------------------------|
| Examiner  | Date Considered 3/5/04 |
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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U.S. PATENT DOCUMENTS

| Examiner Initial | | Document Number | Date | Name | Class | Subclass | Filing Date |
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FOREIGN PATENT DOCUMENTS

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| | | Document Number | Date | Country | Class | Subclass | <u>Translation</u> Yes No |
| as | 1. | WO 92/04469 | 19 March 1992 | PCT |  |  | X |
| as | 2. | WO 90/02205 | 8 March 1990 | PCT |  |  | X |

OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

[illegible]**Examiner**

Alviah H. Satrio

Date Considered

3/5/04

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